ICHTHYOLOGY.—*Four new fishes and one little-known species from the east coast of the United States including the Gulf of Mexico.* Isaac Ginsburg, U. S. Fish and Wildlife Service. (Communicated by L. P. Schultz.)

The specimens on which the four new species here described are based, were obtained by the *Albatross III* on the coast of South Carolina and by the *Oregon* in the Gulf of Mexico and are deposited in the United States National Museum, including the four holotypes, except one paratype from the coast of Massachusetts deposited in the Museum of Comparative Zoology and three paratypes from the Gulf of Mexico in the University of Miami. The illustrations accompanying this paper were drawn by Mildred H. Carrington.

Family Congridae

Uroconger syringinus, n. sp.

The terminology and methods of study and measurements used in examining and describing this species are the same as used in my account of the eels of the northern Gulf coast (1951).

Description.—Trunk compressed to subterete, depth moderate. Tail well tapering, comparatively long, body 1.4–2.0 times in tail. Eye moderately large, 1.6–2.5 times in snout. Mouth rather large, its angle placed under middle of eye or slightly more backward. Jaws of medium extent; lower jaw moderately shorter than upper, 2.4–2.9 times in head. Snout blunt, 3.3–3.9 times in head, extenting moderately beyond lower jaw; premaxillary teeth exposed with the mouth closed, placed close to margin of upper jaw. Upper lip not forming an upturned fold, covered entirely by a broad fold of skin descending from the cheek; two tips of prolongations from buccal ossicle impinging on distal outline of fold and readily appreciable on external inspection; lower lip confined to the side of the jaw, falling considerably short of end of jaw, forming a broad fold deflected downward. Posterior nostril placed in front of and near eye, on a horizontal through middle of eye or slightly above its middle, its margin slightly or hardly raised; anterior nostril placed nearly on lateral aspect not far from end of snout, with a membranous well raised margin. A large pore directly over anterior nostril, extending partly more forward then nostril; a somewhat smaller pore at some distance behind and slightly higher; a medium sized pore directly behind anterior nostril; three very large elongate apertures at edge of cheek fold, the first near to medium sized pore, the third under anterior part of eye. Tongue free, rather well developed. Gill opening almost transverse, mainly lateral, rather large, slightly smaller or larger than distance between the two fellows. Dorsal origin on a vertical at a short or moderate distance behind pectoral base. Dorsal, anal and caudal continuous, of medium development except caudal moderately long (for an eel). Pectoral placed behind gill opening, at its upper angle, rather narrow, its length subequal to snout or slightly longer. Teeth slender, sharp, spaced, the anterior teeth generally rather large caninoid; teeth on side of both jaws in two well separated rows, the teeth in the rows similar, rather large anteriorly gradually or rather irregularly changing to posterior smaller teeth, posterior teeth in outer row smaller than those in inner row. In lower jaw the rows continued around symphysis but the two-rowed arrangement not as sharply marked there and the front teeth smaller than the anterior lateral teeth; a third lengthwise row of 4 or 5 teeth at anterior part of lower jaw, near midline, the teeth in this row becoming larger posteriorly, the two fellow rows somewhat diverging posteriorly, the hindmost two teeth in the third row largest of any in lower jaw. Upper jaw with anterior lateral 5 to 8 teeth graduated, growing larger posteriorly, thence gradually decreasing in size. Premaxillary teeth rather well separated from jaw and palatal teeth; in two transverse, nearly parallel, curving rows, 5 to 7 teeth in a row, teeth in outer row smaller, outer tooth of inner row largest of any in upper jaw. Palatal teeth preceded by one caninoid on midline or two caninoids, one behind the other, the anterior caninoid generally flanked on both sides by one smaller tooth, the one or two caninoids followed after a variable interval by a single median row of rather small, sharp teeth extending approximately to a variably placed vertical plane through eye.

Measurements of two specimens 255–279 mm, two specimens 313–333 mm, and one specimen 416 mm; the following proportional measurements given in three groups in the same order, respectively: body 37–41, 37.0–39.5, 33.5; trunk 23.0–25.5, 24.0–24.5, 21.5; tail 59–63, 60–63, 67; antedorsal 15.0–16.9; 15.4–16.0, 13.3; head

FIG. 1.—*Uroconger syringinus*, n. sp., from the holotype (U.S.N.M. 157781) from off Mississippi Delta, 50 fathoms (28° 45′ N., 89° 43′ W.); 279 mm.

14.3–16.4, 13.5–14.7, 13.6; upper jaw 5.4–7.3, 5.8–6.1, 5.2; lower jaw 4.9–6.8, 5.3–5.7, 4.9; snout 3.8–4.6, 3.9–4.3, 3.5; eye 1.9–2.3, 2.1–2.3, 1.4; depth 4.4–4.8, 5.0–5.3, 5.0; pectoral 3.7–4.8, 4.4, 3.5; caudal 2.8–3.4, 3.4–5.0, 2.3; body in tail 1.4–1.7, 1.5–1.7 and 2.0 times; snout in head 3.6–3.8, 3.3–3.4 and 3.9 times; lower jaw in head 2.4–2.9, 2.4–2.6 and 2.8 times; eye in snout 1.7–2.4, 1.6–2.1 and 2.5 times.

Prevailing color yellowish or grayish; ventral aspect and posterior part of tail with a lilaceous tinge more or less developed; head with a faint trace of lilaceous; greater posterior part of trunk and anterior part of tail with a lengthwise irregular row of very small dark dots, few or in moderate numbers, irregularly spaced, placed somewhat below midline; caudal and posterior part of dorsal and anal black.

Holotype.—U.S.N.M. 157781. *Oregon* station 10; lat. 28° 45′ N., long. 89° 43′ W.; off Mississippi Delta; 50 fathoms; May 28, 1950; 279 mm.

Paratypes.—Off Port Isabel, Tex.; 55 fathoms; 1 specimen 333 mm (U.S.N.M. 157789). Gulf of Mexico (exact locality uncertain) 3 specimens 255–416 mm (University of Miami).

Remarks.—A state of confusion appears to exist in the literature regarding the species hitherto placed in *Uroconger*. Richardson (1844: 106) in describing his *Conger lepturus* stated that it has two or three teeth on the palate ("vomer"). Kaup (1856: 110) paraphrased briefly Richardson's description and established his monotypic genus *Uroconger* based solely on this description. Bleeker (1864: 29) and also Day (1878: 661) followed by later, including very recent, authors use the name *Uroconger lepturus* for a species having a row of teeth on the palate, instead of two or three teeth as described by Richardson. Vaillant (1888: 86) described his *Uroconger vicinus* as also having two teeth on the palate. This corroborates Richardson's account in that at least one species with only two teeth on the palate does exist. Vaillant's *vicinus* might be the same as Richardson's *lepturus* or it might represent a distinct and closely related species; while the *U. lepturus* of Bleeker, Day and other authors is most likely a different species, possibly the same as *Congerodon indicus* Kaup (Arch. Naturg. **22** (1): 74. 1856).

The species here described differs from *Uroconger lepturus* (Richardson) in having a row of palatal teeth, instead of two or three. In this respect it agrees with the *U. lepturus* of authors (not Richardson). A specimen (269 mm) of what appears to be the latter species (U.S.N.M. 135309, taken off the southwest coast of Celebes) differs from *syringinus* as follows: body 30.5, tail 69.5, trunk 19.0, antedorsal 12.7, head 12.4. This species, then, has a longer tail and shorter body, trunk, antedorsal distance and head as compared with *syringinus*. The posterior part of the tail in this specimen is more attenuated as compared with the type of *syringinus* of nearly equal size.

In my recently published key to the Congridae of the northern Gulf of Mexico (1951: 437) the species here described falls in between *Conger-muraena impressa* and the genus *Congrina*. It agrees with *Congrina* in that a broad fold descending from the cheek covers the upper lip

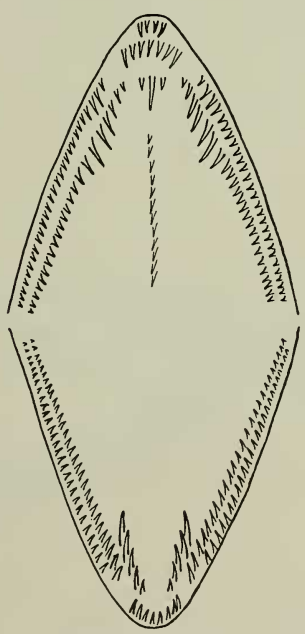

FIG. 2.—*Uroconger syringinus*, n. sp., dentition; semi-diagrammatic.

and contains extensions from the buccal ossicle that are readily appreciable on external examination. Also, the caudal is comparatively well developed as in *Congrina*. It differs from *Congrina* in the dentition in its sharp, slender teeth in 2 rows in upper jaw, three rows in lower jaw and nearly a single row on palate. The premaxillary teeth are placed near the end of the upper jaw instead of at some distance behind the end. The extent to which the snout projects beyond the lower jaw is about intermediate as compared with *Congrina* on the one hand and *Congermuraena* on the other.

In this species the relative length of the tail appears to increase with growth which is contrary to growth changes in other eels (see Ginsburg, 1951: 444 and passim).

Family Stromateidae

Genus **Cubiceps** Lowe

Cubiceps Lowe, Proc. Zool. Soc. London **11:** 82. 1843. (Genotype, *Seriola gracilis* Lowe by monotypy. The species is described under the above name; but the author suggests that it might belong to a separate genus and if so he proposes the name *Cubiceps* for it.)

The following description is based on and includes the characters common to the two species here treated.

Description.—Elongate, compressed, somewhat spindle shaped, but tapering more posteriorly than anteriorly. Eye large, its adipose margin moderately developed. Snout blunt, slightly longer than eye. Mouth small, moderately inclined, terminal, the jaws equal or lower jaw slightly projecting. Maxillary falling short of a vertical through anterior margin of eye, of moderate width, slipping for its entire length and greater part under suborbital, leaving a narrow or slight outer strip exposed; supplemental maxillary very thin, almost membranous, rather broad and of moderate length. Teeth small, of nearly uniform size, compressed, moderately pointed or rather blunt, close-set, in a single row in jaws; none on vomer and palatine. Opercular series of bones notably thin and flexible. Opercle with a well emarginate area at its posterior end, bridged over by a thin membranous area; without spines; its anterior part with slight ridges somewhat diverging backward. Gill opening wide; branchiostegal membranes separate all the way forward, continued to chin, the inner edge of the two fellows about parallel at their anterior extent. Pseudobranchiae well developed. Gill rakers well developed, easily countable including those at the ends of the arch, moderately long at angle gradually decreasing in size both ways. Pharynx muscular, bulging, its inner surface with thick, rather low, columnar bodies bearing slender, short, spine-like teeth. Mid-ventral line with a furrow between anus and pelvic fins. Scales cycloid, large to medium, about 39–68 oblique rows over lateral line; body including chest completely scaled, on antedorsal area scales extending to opposite anterior margin of pupil or eye; cheek scaled; snout scaleless, densely beset with small pores; opercle probably without scales, in large part anyway; base of second dorsal and anal fins with a densely scaled sheath; caudal scaled in large part, pectoral and pelvic fins scaled for some distance at their base; lateral line placed high, two longitudinal rows of scales between it and dorsal base, the scales with profusely branched channels. (Most or nearly all scales are missing in all specimens examined and some of the above statements are based largely on a study of the scale pockets. The extent of scalation on the opercle, if any, is not definitely determinable. The lateral line is best preserved in the holotype of *nigriargenteus*, its greater part, to about the twenty fifth scale, but the course of its posterior part is not determinable in any specimen.) Two completely separate dorsal fins; first dorsal with 11 more or less flexible spines, the anterior 4 unevenly graduated, fifth subequal to fourth, thence gradually and rapidly decreasing in length to last; second dorsal comparatively rather low, the first ray flexible or rather stiff, usually unjointed, presumably a spine homologically (in one specimen of *nigriargenteus* the first ray jointed), followed by 15 jointed and mostly branched rays, the rays rather widely spaced, posterior few rays somewhat thickened, the last ray notably thick and longer than preceding rays. The three anal spines stiff, pungent or the third somewhat flexible, unevenly graduated, anterior two short, the second a little longer than the first the third considerably longer, followed by 14 or 15 jointed rays, the soft rayed part of anal similar to second dorsal. Base of second dorsal and anal with a series of somewhat oval shaped or rounded fossae, the corresponding pair from the two sides usually continuous resulting in a series of perforations, every perforation placed between an adjacent pair of rays, at their bases. Pelvic reaching about half the distance from its base to anal origin or a little more; its outer spine more or less

flexible, falling moderately short of its apex; its outer angle a little behind lower pectoral angle, on a vertical nearly through origin of first dorsal or a little behind. Pectoral reaching a vertical at some distance behind end of pelvic; moderately falcate, the lower rays short, the longest rays a little below upper margin. Caudal with a deep V-shaped incision or well lunate.

Remarks.—It is doubtful whether the two species here treated are congeneric with *C. gracilis* (Lowe), the genotype of *Cubiceps*. However, the necessary material is unavailable to compare our two species with *gracilis* and to properly resolve the question of the limits of *Cubiceps* and its synonymy. The following two species are therefore only tentatively allocated to this genus.

Cubiceps nigriargenteus, n. sp.

D XI; (0) I 15 (16). A III 15. P 21–22. Sc about 39–56. GR 9–10 + 17–19.

Description.—First dorsal and anal counts constant in the eight specimens examined. Second dorsal typically with one flexible spine and 15 segmented rays (in 7); in one variant (U.S.N.M. 157775) the first fin support also a jointed (and unbranched) ray. Pectoral rays 22 (in 5) or 21 (in 3). Roughly about 39–56 oblique rows of scales over lateral line (not possible to determine the number with anything approaching accuracy as discussed below). Gill rakers 9 + 17, 9 + 18, 9 + 19 and 10 + 19 (the four counts listed in two specimens each). Beginning of scalation on dorsal aspect in a somewhat curved line situated over anterior margin of pupil, varying very slightly both ways.

Measurements of four specimens 138–174 mm and four specimens 199–229 mm, those of the smaller specimens in parentheses: caudal 22 in 1 (22–25 in 2), pectoral 23.5–25.0 (22.0–26.5), pelvic 14.2–14.9 (14.6–16.7), depth 26.0–27.5 (26.5–29.5), head 28.5–32.0 (29.5–32.0), maxillary 7.7–8.7 (7.2–7.9), snout 8.8–9.4 (8.6–9.6), eye 7.3–8.4 (7.6–8.6), interorbital 9.0–10.3 (9.0–9.9), antedorsal distance 32.5–33.5 (33–34), preanal distance (tip of snout to anal origin) 62–65 (60–63).

Color of the eight preserved and largely or almost wholly desquamated specimens as follows: Lower part of body and head silvery, upper part dark to nearly black, the more or less distinct boundary between the two colors being a nearly median longitudinal line. The above color pattern present in 6 specimens 138–221 mm. Two specimens 205–229 mm have a dusky color with the lower part only moderately lighter than the upper part and the color changing rather gradually from the back to the ventral aspect. No distinctive color marks.

Holotype.—U.S.N.M. 151954; off Cape Romain, S. C.; 92 fathoms; *Albatross III*; January 30, 1950; 189 mm in standard length; about 229 mm in total length.

Paratypes.—Sandwich, Mass., in fish trap (M.C.Z. 37183). Off Santa Rosa Island (U.S.N.M. 157774–5) and Pensacola (U.S.N.M. 157777), Fla.; taken by the *Oregon*. Total examined 7 paratypes 138–221 mm; taken by trawls, except the first one listed, in 112–175 fathoms.

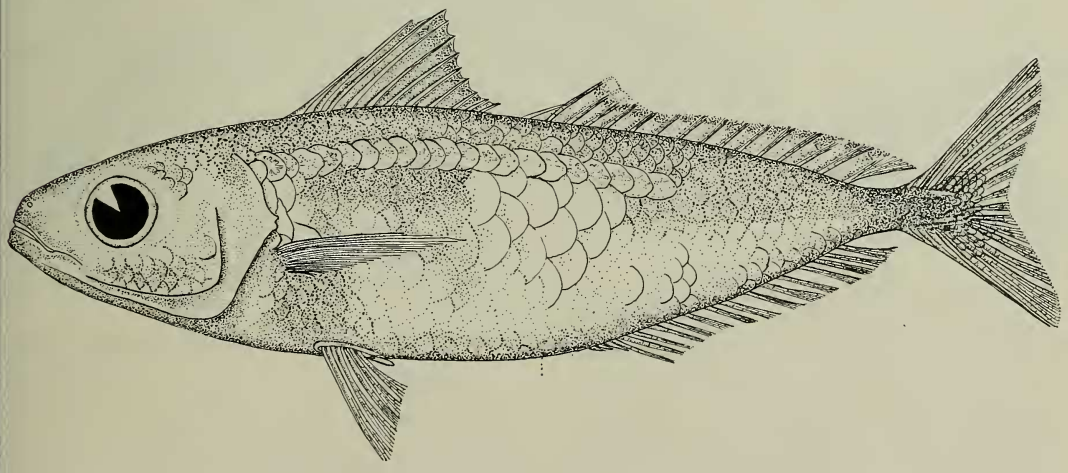

Fig. 3.—*Cubiceps nigriargenteus*, n. sp., from the holotype (U.S.N.M. 151954), from off Cape Romain, S. C., 92 fathoms; about 229 mm.

Remarks.—This species is near *C. brevimanus* Klunzinger from the Red Sea (Fische des Rothen Meeres: 116, pl. 12, fig. 3. 1884). As compared with the account of that species it differs in having 21 or 22 pectoral rays, instead of 24; and 11 dorsal spines, instead of 10. It is still nearer structurally to *melanus* with which it is compared below under the account of that species.

Cubiceps melanus, n. sp.

D XI; I 15. A III 14–15. P 21–22. Sc about 62–68. GR 9–11 + 18–20.

Description.—Dorsal spines and rays and anal spines constant in the nine specimens examined. Anal rays predominantly 15 (in 7), often 14 (in 2). Pectoral rays predominantly 22 (in 7), often 21 (in 2). Roughly about 62–67 oblique rows of scales over lateral line (not possible to determine the count with precision as discussed below). Gill rakers on upper limb 9 (in 2), 10 (5) or 11 (2); on lower limb 18 (2), 19 (4) or 20 (3); total number on both limbs 27 (1), 29 (5) or 30 (3). Beginning of scalation on dorsal aspect in a somewhat curved line situated over anterior margin of eye, varying very slightly both ways.

Measurements of eight specimens 138–174 mm and 1 specimen 185 mm, those of the smaller specimens in parentheses: caudal (21.5–23.0 in 3), pectoral 22 (22–24 in 6), pelvic 14.5 (13.7–14.8 in 4), depth 26.5 (25.0–28.5), head 31.5 (29.5–32.0), maxillary 9.4 (8.4–9.3), snout 10.6 (9.4–10.1), eye 8.1 (7.0–8.7), interorbital 9.8 (8.8–9.8), antedorsal 35 (33.5–35.5), preanal 64 (61.5–64.5).

Brownish dusky or nearly black, all over, or nearly so, sometimes silvery to some extent on posterior and lower part of opercular series of bones, chest and a narrow area on ventral aspect sometimes washed with silvery shades. No distinctive color marks.

Holotype.—U.S.N.M. 157779; off Mississippi Delta; 190–210 fathoms; *Oregon* station 382; lat. 29° 11′ 30″ N., long. 88° 07′ 30″ W.; June 21 1951; 153.5 mm in standard length, about 185 mm in total length.

Paratypes.—Off Mississippi Delta, *Oregon* stations 480–484 (U.S.N.M. 157780). Off Pensacola, *Oregon* station 314 (U.S.N.M. 157787). Off Cape Romain, S. C., *Albatross III* (U.S.N.M. 151903). Off Cape Lookout, N. C., *Albatross III* (151922). Total examined eight paratypes 138–174 mm taken in 125–200 fathoms.

Remarks.—This species is separable from *nigriargenteus* with much difficulty. They are distinguishable chiefly by four differences, namely the size of the scales, the color, the extent of scalation on the interorbital region and the maxillary length. The scale count possibly constitutes the best character for separating them, but in practice it cannot be applied with precision because the scales are deciduous and almost all or the greater part of the scales are missing in all specimens examined of both species. The scale pockets also are weak and nearly disappear so that their outlines are generally faint or hardly traceable in preserved specimens. The other 3 differences are slight or not sharply divergent.

The number of scales was determined by counting the oblique rows of the more or less faintly outlined scale pockets above the normal position of the lateral line. In 8 specimens of *nigriargenteus* the determined range is 39–56; in 9 individuals of this species it is 62–68. While the two species evidently differ in the number of scales, the given numbers are only very roughly approximate, because of the practical impossibility of making a precise count as stated.

The color of *melanus* is a nearly uniform dusky to black; while in most specimens of *nigriargenteus* the upper part is dark and the lower part silvery the two colors usually being rather sharply contrasted; but often the dark upper part blends gradually with a somewhat lighter color on the lower part of the body.

In *melanus* the scalation on the dorsal aspect extends approximately to over the anterior margin of the eye; in *nigriargenteus* approximately to over the anterior margin of the pupil. This difference is slight and is appreciable only on direct comparison of specimens. Morover, there is a slight individual variability within the limits of each species.

The maxillary length is 8.4–9.4 per cent of the standard length in 9 specimens of *melanus* 138–185 mm and 7.2–8.7 in 8 specimens of *nigriargenteus* 138–229 mm. This difference then is also slight and somewhat intergrading.

Other differences or possible differences that intergrade still more are as follows.

The gill raker count evidently averages higher in *melanus* as may be gathered by the data given under the two species. While the two species intergrade considerably in these numbers, the few specimens examined would seem to suggest

a degree of divergence of at least subspecies magnitude.

Two out of nine specimens of *melanus* have 14 anal rays, while in eight specimens of *nigri-argenteus* the count is constantly 15.

The few specimens measured suggest some possible slight average differences as follows: *melanus* having shorter fins, a slenderer body, longer snout and longer antedorsal. But these differences, if any, evidently are widely intergrading.

Palinurichthys bythites, n. sp.

D VI; I 23–25. A III 17. P 21–22. Sc 85–87. GR 7 + 16–17.

Description.—Body and caudal peduncle rather deep and compressed. Snout short, notably obtuse, its anterior aspect broad and nearly vertical (resembling that of a pompano). Eye large, subequal to or slightly smaller than snout. Adipose eyelid slight. Maxillary of moderate width, rather short, ending under middle of eye, exposed for its entire length; no supplemental maxillary, its upper part separated by an elongate groove but without an evident suture. Preopercle notably expanded, its distal lower margin broadly curved, slightly scalloped and slightly and rather sparsely serrate. Mouth small, very moderately inclined, placed low, a horizontal through distal margin of upper lip passing through lower margin of eye; subterminal, lower jaw slightly included. Teeth small, in one row in jaws; none on vomer, palatines and tongue. Gill opening broad, branchiostegal membranes united under eye. Pseudobranchiae moderate. Gill rakers well developed, broad, compressed, 7 + 16–17, including one small gill raker at either end of the arch. Pharynx muscular, bulging, its inner surface with low hummock-like projections, each with a group of sharp spine-like teeth. Scales cycloid, small, in 85–87 oblique rows over lateral line to caudal base (scales largely deciduous and count based on rows of scale pockets); body, including belly, chest, fleshy pectoral base and posterior part of predorsal area, almost altogether scaled, the squamation extending to a transverse, moderately oblique line a little behind upper angle of gill opening; a scaled strip at posterior boundary of cheek continued upward along preopercular margin behind eye; (opercle probably scaled, perhaps in part, skin on opercle destroyed in large part and scalation there indeterminable); rest of head naked; caudal scaled in its larger, proximal part; other fins scaled at their base. Head, from boundary of scalation forward, thickly beset with many pores forming openings to short, irregular channels under the skin. Lateral line slightly sinuous; its curve very moderately elevated, long, gradually merging with posterior straight part approximately over middle of anal base. Dorsal with anterior 6 spines well spaced, moderately stout, short, partly disconnected distally from one another, slightly graduated from first to fourth, fifth and sixth subequal to fourth; seventh spine abruptly

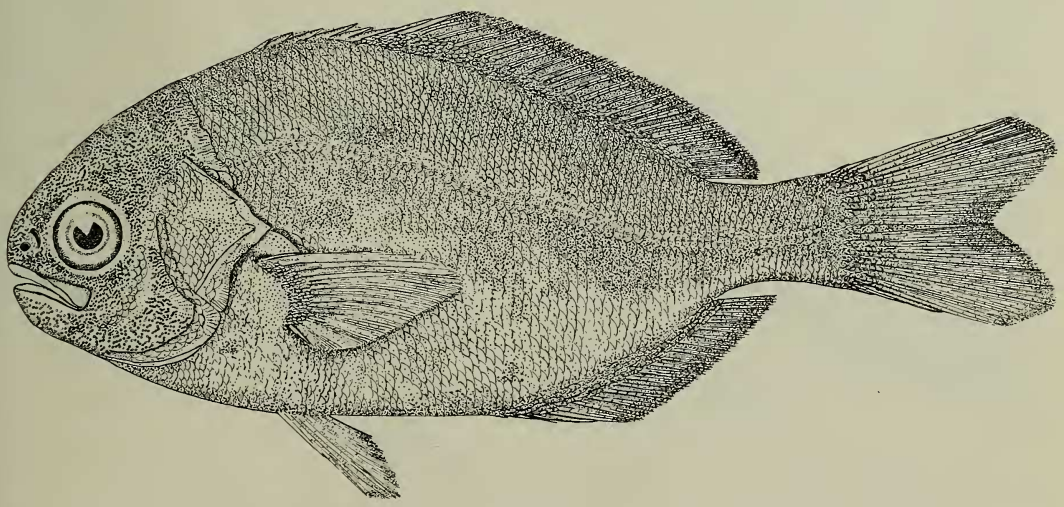

FIG. 4.—*Palinurichthys bythites*, n. sp., from the holotype (U.S.N.M. 157776), from off Pensacola, Fla., 220 fathoms (29° 27′ N., 87° 19′ W.); 253 mm.

longer and slenderer, closely approximated to soft rays (here considered part of second dorsal); the two dorsals continuous; anterior few soft rays graduated growing longer posteriorly, thence very slowly decreasing in length, first ray segmented and unbranched, others branched, last two rays rather thickened and closely approximated (here counted as two branches of one ray). Anal similar to dorsal except that the three spines well graduated connected to one another; spines and soft rays forming one continuous fin, and all rays including the first, branched. Ventral rather well developed, falling moderately short of anus. Pectoral broad, fifth or sixth ray longest, its distal oblique margin a nearly straight line, its length moderate, reaching a point approximately over anus. Caudal rather well emarginate, shorter than head.

Depth 43.0–45.5, head 32.0–32.5, depth of caudal peduncle 11.5–12.4, maxillary 12.0–12.4, snout 8.7–9.2, eye (measured between soft margins of lid) 7.8–8.7 (3.84–4.22 times in head), interorbital 11.8–13.7, ventral 20–21, pectoral 25.5–27.0, caudal 26–27.

Yellowish above, silvery below, the fins more or less dusky; no distinctive markings. (Nearly all scales are missing on the upper part of body and if any color pattern was present in life it might have been obliterated.)

Holotype.—U.S.N.M. 157776. *Oregon* station 321, lat. 29° 27′ N., long. 87° 19′ W.; off Pensacola, Fla.; 220 fathoms; April 28, 1951; 253 mm.

Paratype.—*Oregon* station 351, lat. 29° 13′ N., long. 88° W.; east of Mississippi Delta; 200 fathoms; May 22, 1951; 239 mm (U.S.N.M. 157778).

Stewart Springer states in a letter that this species appears to be common at about 220 fathoms.

Remarks.—By the shape of its snout particularly, and the short partly disconnected dorsal spines, this species resembles a pompano. However, the scales are larger and the caudal fin not as deeply forked as in pompanos, and the anterior dorsal and anal rays are not produced into prominent lobes. By the presence of sharp, spine-like esophageal teeth and by other characters this species properly belongs to the Stromateidae.

This species is apparently near *Palinurichthys pringlei* Smith (1949a: 304, fig. 849; 1949b: 844) from off Dassen Island, South Africa, and differs in having more gill rakers and possibly a somewhat deeper body. In the three species of this genus examined, namely, *bythites*, *perciformis* and *ovalis*, six specimens in all, the gill raker count is comparatively constant 6–7 + 16–18 (counted on both sides) while in the one specimen of *pringlei* recorded it is 7 + 14–15.

As compared with *Palinurichthys perciformis* (De Kay) from the northwestern Atlantic, this species differs at a glance by its deeper body and larger eye. It also has the short spines one less and the soft dorsal rays are more numerous. In three specimens of *perciformis* 230–287 mm from Ocean City, Md. (U.S.N.M. 57805), Barnegat Bay, N. J. (U.S.N.M. 104910) and Le Have, Nova Scotia (U.S.N.M. 22650): Depth 37.5–38.0; eye 6.1–7.1, 4.61–4.81 times in head. D VII; I 21–22.

A specimen 274 mm in standard length with the caudal damaged (probably near 345 mm long), labeled *Mupus ovalis* in the National Museum (23323), nearly agrees with Regan's description of his *Lirus ovalis* (1902: 198). Its counts and measurements are: Depth 45; eye 6.3, 4.64 times in head. D VI; I 31; A III 23. This species then has a higher dorsal and anal count than *bythites* and *perciformis*. Its body depth is as in *bythites* while the size of the eye as in *perciformis*. It further differs from the two western Atlantic species in that the last three short spines are somewhat graduated growing slightly larger posteriorly while in the latter two species the corresponding three spines are subequal or they grow slightly smaller posteriorly; but this difference is slight. The soft dorsal in this specimen is damaged, but the longest rays seem to be near its middle, instead of near its anterior part as in the two American species. But this difference also is slight. There seem to be no well-marked generic differences between the specimen labeled *ovalis* and *bythites* and *perciformis*.

The generic name to be used for the three species examined is uncertain. *Leirus* Lowe is preoccupied, hence it or its emended form *Lirus* is unavailable. Under his account of *Lirus*, Regan (1902: 195) lists *Mupus* Cocco, *Schedophilus* Cocco, *Crius* Valenciennes and *Palinurus* De Kay as synonyms, in chronological order. Therefore *Mupus* would seem to be the next name to be considered as a generic name for the above three congeneric species. Cocco's paper is unavailable to me for examination. According to Jordan (1919: 178) the type of *Mupus* is

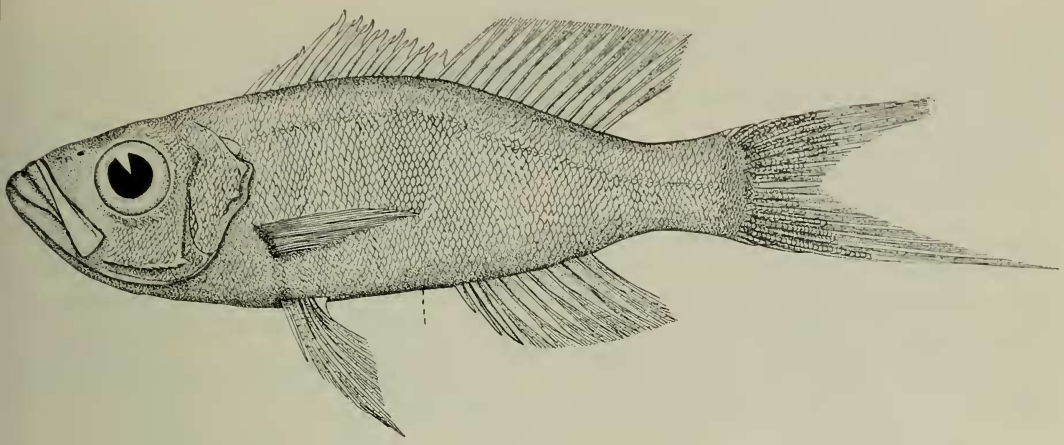

Fig. 5.—*Anthiasicus leptus* Ginsburg, from the holotype (U.S.N.M. 134189), off Dauphin Island, Ala., 68 fathoms (29° 14′ 30″ N., 88° 09′ 30″ W.); about 160 mm, 108 mm in standard length.

M. imperialis Cocco. The latter name is tentatively placed in the synonymy of *Lirus ovalis* by Regan (1902: 198). Consequently, according to these authors *Mupus* would seem to be properly applied to the three species here considered. However, neither Regan nor anybody else to my knowledge has determined definitely the taxonomic status of *Mupus imperialis* Cocco by a study of original specimens. Therefore, I here prefer to use for this species the generic name *Palinurichthys* Bleeker, which has been proposed as a substitute for the preoccupied name *Palinurus* De Kay, because that name has been most often associated with the American species of the genus.

Fowler (1936: 1281) substitutes Cocco's name *imperialis* for *ovalis* "by right of slight priority," also employing the generic name *Mupus*. However, he does not present evidence to prove the synonymy used or to settle the question of priority.

In our present connection attention should be called also to the following accounts:

Palinurichthys griseolineatus Norman (1937: 117), described from the Atlantic coast of South America apparently differs from our species in its more numerous dorsal and anal rays, judged by its description. The species identified by Norman in the same paper as *P. caeruleus* (Guichenot) apparently differs from ours in

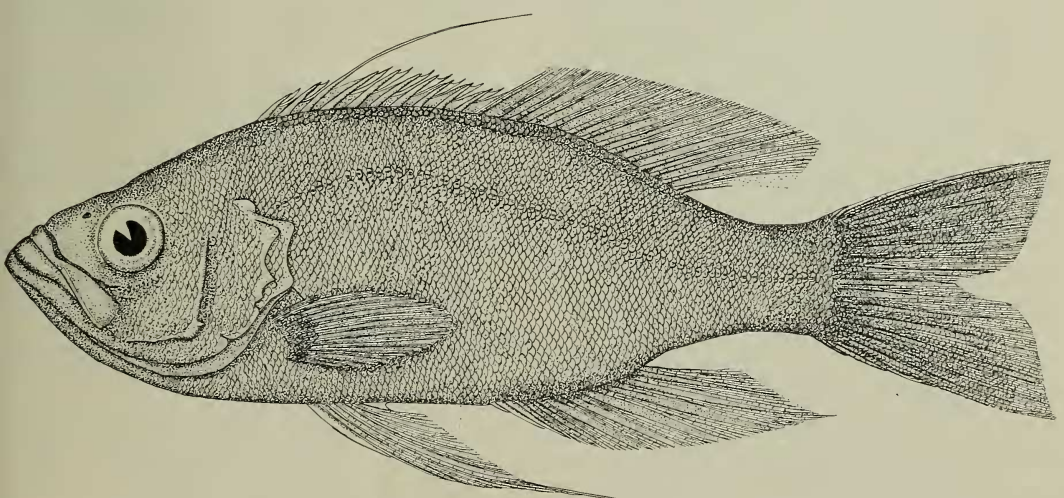

Fig. 6.—*Anthiasicus leptus* Ginsburg (U.S.N.M. 157788) from off Cape San Blas, Fla., 112 fathoms (29° 49′ N., 85° 45′ W.); 308 mm, 240 mm in standard length.

that the posterior curve in the lateral line is nearly absent and possibly also in having more numerous dorsal and anal rays. (Norman is uncertain of its counts.)

Toledia macrophthalma Miranda Ribeiro (1915: Stromateidae, p. 5, photo.) described and illustrated by a photograph from a single larger specimen, 680 mm, from the coast of Brazil possibly also represents a related and congeneric species. It apparently nearly agrees in the dorsal and anal counts with *bythites*, but it is evidently a slenderer fish. Judged by the photograph the snout has its anterior profile oblique instead of vertical.

Family Serranidae

Anthiasicus leptus Ginsburg

Anthiasicus leptus Ginsburg, Journ. Washington Acad. Sci. **42** (3): 91, photo. 1952 (off Alabama).

This species was described from a single specimen 108 mm in standard length, about 160 mm in total length, taken by the *Albatross* in 1885. A considerably larger specimen which appears to be the same species was obtained by the *Oregon* (U.S.N.M. 157788). The counts of this specimen which is 308 mm long, 240 mm in standard length, are as follows: D X 14. A III 8. P 18. Sc about 86. GR 10 + 27. These characters then agree closely with those of the holotype, and it apparently belongs to the same species. If so, this species undergoes a remarkable change with growth, as shown by the figures of the two specimens here published (Figs. 5, 6). The third dorsal spine and the second pelvic ray become greatly elongate and filamentous. Such growth changes are now and then duplicated in other serranids, although not often. On the other hand, in some instances such differences constitute specific or even generic characters. But the most remarkable growth change takes place in the shape of the caudal fin, from being deeply lunate to the unusual shape indicated on the drawing (Fig. 6).

Four specimens in the Chicago Natural History Museum, in intermediate sizes between the foregoing two specimens, lend some confirmation to the interpretation here given of growth changes in this species; but they do not complete the series to show a gradual transition.

In view of these probable growth changes, the validity of the genus *Anthiasicus*, having *leptus* for its type species, becomes doubtful, as its distinction from related genera was based to a large extent on differences that now appear to be governed by remarkable growth changes. Perhaps *Anthiasicus* should be merged with *Hemanthias* which is based on *peruanus*, a species from the Pacific coast of South America. However, only one specimen of the latter species, in indifferent condition, is available for comparison, and *Anthiasicus* is here tentatively recognized pending an adequate study of pertinent, comparative material.

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